

POINT-SLOPE FORMULA

NAME: _____

Block: _____

POINT-SLOPE FORMULA, $y - y_1 = m(x - x_1)$ is used to find the equation of a line when **given** a point and the slope of a line.1) Substitute the values for y_1 , x_1 , and **the slope** (m) into the formula.2) The " x " and the " y " remain in the formula.* 3) Solve for y to find the linear equation in the slope-intercept formula, $y = mx + b$

Examples:

through: $(2, 1)$, slope = $\frac{3}{2}$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = \frac{3}{2}(x - 2)$$

$$y - 1 = \frac{3}{2}x - 3$$

$$y = \frac{3}{2}x - 2$$

Practice:

through: $(2, -3)$, slope = $-\frac{5}{7}$

$$y - y_1 = m(x - x_1)$$

$$y + 3 = -\frac{5}{7}(x - 2)$$

$$y + 3 = -\frac{5}{7}x + \frac{10}{7}$$

$$y = -\frac{5}{7}x - \frac{11}{7}$$

through: $(-5, -3)$, slope = 1

$$y - y_1 = m(x - x_1)$$

$$y + 3 = 1(x + 5)$$

$$y + 3 = x + 5$$

$$y = x + 2$$

through: $(3, -1)$, slope = $-\frac{2}{3}$

$$y - y_1 = m(x - x_1)$$

$$y + 1 = -\frac{2}{3}(x - 3)$$

$$y + 1 = -\frac{2}{3}x + 2$$

$$y = -\frac{2}{3}x + 1$$

Why Did the Orchestra Get an "R" Rating?



Write the equation in the form indicated. Circle the letter next to the correct equation, then write this letter in each box containing the exercise number.

In Exercises 1-7, write the equation in slope-intercept form.

1. $y + 8 = 3(x + 2)$

K $y = 3x - 6$

H $y = 3x - 2$

2. $y - 5 = \frac{1}{2}(x + 4)$

T $y = \frac{1}{2}x - 1$

D $y = \frac{1}{2}x + 7$

3. $y - 9 = -5(x - 2)$

A $y = -5x + 19$

E $y = -5x - 1$

4. $y + 1 = \frac{2}{3}(x - 12)$

Y $y = \frac{2}{3}x - 4$

U $y = \frac{2}{3}x - 9$

5. $y - 2 = \frac{7}{4}(x + 1)$

I $y = \frac{7}{4}x + \frac{15}{4}$

B $y = \frac{7}{4}x + \frac{3}{4}$

6. $y - 4 = -\frac{1}{5}(x - 3)$

T $y = -\frac{1}{5}x + \frac{23}{5}$

S $y = -\frac{1}{5}x + \frac{8}{5}$

7. $y - 7 = -\frac{8}{3}(x + 2)$

P $y = -\frac{8}{3}x - \frac{29}{3}$

V $y = -\frac{8}{3}x + \frac{5}{3}$

In Exercises 8-14, write the equation in standard form with integer coefficients.

8. $y = 2x + 9$

M $-2x + y = 9$

L $2x - y = 9$

9. $y = \frac{4}{3}x - 1$

R $-4x - 3y = 1$

N $-4x + 3y = -3$

10. $y = -\frac{5}{8}x + 3$

S $5x - 8y = 15$

C $5x + 8y = 24$

11. $y = -4x - 15$

L $4x + y = -15$

G $-4x + y = 15$

12. $y = \frac{3}{10}x + 8$

B $-3x - 10y = 60$

X $-3x + 10y = 80$

13. $y = -\frac{16}{5}x + \frac{4}{5}$

O $16x + 5y = 4$

E $-16x - 5y = 4$

14. $y = \frac{7}{4}x - \frac{1}{8}$

R $14x + 8y = -8$

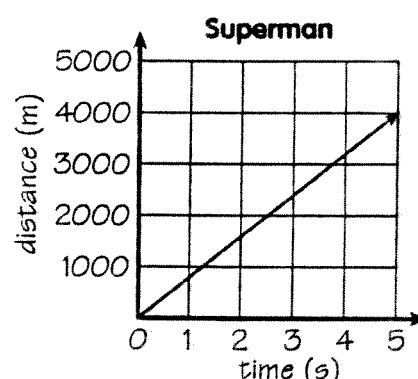
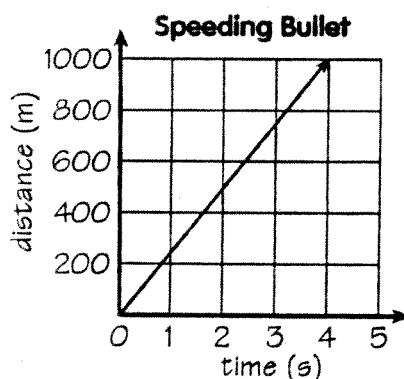
S $-14x + 8y = -1$



6	13	13	8	4	10	1	14	3	12	3	9	2	7	5	13	11	5	9	14
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extra: Comparing Slopes

- Which of these two graphed lines has the greater slope?
- What is the slope of the speeding bullet graph?
- What is the slope of the Superman graph?
- Which is faster, Superman or a speeding bullet?



What Do You Call Two Birds Relaxing In the Midday Sun?



Find the equation of the line through the given point with the given slope. Cross out the letters next to each correct answer. For each letter pair you DON'T cross out, write the uppercase letter in the box with the lowercase letter.

In Exercises 1-5, write your answer in point-slope form.

1. $(3, -4); m = 2$

Answers 1-5

o · D $y = \frac{7}{2}(x - 8)$

2. $(-1, 5); m = -\frac{4}{3}$

g · N $y + 2 = -\frac{1}{6}(x - 9)$ **f · R** $y + 4 = 2(x - 3)$

3. $(8, 0); m = \frac{7}{2}$

b · L $y + 6 = -3x$ **c · A** $y + 5 = -\frac{4}{3}(x + 1)$

4. $(-2, -9); m = -\frac{1}{6}$

j · E $y - 5 = -\frac{4}{3}(x + 1)$ **l · I** $y - 6 = 3x$

5. $(0, -6); m = -3$

n · S $y = -\frac{7}{2}(x + 8)$ **d · T** $y + 9 = -\frac{1}{6}(x + 2)$

In Exercises 6-10, write your answer in slope-intercept form.

6. $(8, 5); m = \frac{1}{4}$

Answers 6-10

f · I $y = -\frac{1}{2}x - \frac{9}{2}$

7. $(4, -1); m = -2$

i · F $y = \frac{5}{3}x + 12$

k · T $y = -2x + 7$

8. $(-6, 2); m = \frac{5}{3}$

j · O $y = -2x + 3$

m · N $y = \frac{5}{3}x + 7$

9. $(-7, -4); m = -\frac{1}{2}$

e · R $y = 5x - \frac{15}{2}$

b · B $y = 5x - 12$

10. $(\frac{3}{2}, 0); m = 5$

h · E $y = \frac{1}{4}x + 3$

a · S $y = -\frac{1}{2}x - \frac{15}{2}$

In Exercises 11-15, write your answer in standard form with integer coefficients.

11. $(-5, 2); m = \frac{2}{5}$

Answers 11-15

k · L $-2x + 5y = 20$

12. $(-6, -1); m = -4$

e · K $3x - 8y = 20$

d · S $-9x - 4y = -15$

13. $(3, -3); m = -\frac{3}{8}$

o · E $4x + y = -25$

h · G $y = -9$

14. $(0, \frac{1}{2}); m = \frac{9}{4}$

k · B $-2x - 5y = 15$

i · R $-4x + y = -9$

15. $(\frac{16}{3}, -9); m = 0$

d · T $3x + 8y = -15$

e · P $-9x + 4y = 2$

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
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